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E-Business: Revolution, Evolution, or Hype?

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Abstract

As the Internet continues to grow in size and capability, many firms are implementing Web-based applications and Internet-derived economic change continues to occur. If this change is revolutionary, now or in the near future, then many managers will be required to rethink their firm strategies and managerial responses in a profound way. On the other hand, if the change is simply evolutionary, it will apply more to some firms than to others, and pre-Internet strategies and managerial responses will still be appropriate in many circumstances. While it is premature to categorize e-business as revolutionary, e-business is not a silver bullet, rather it will be a useful tool for some firms and some tasks. There are a number of key questions firm should ask in order to make sense of e-business.

Keywords

electronic commerce, technological planning, trends, organizational change

Disciplines

Business Administration, Management, and Operations | E-Commerce | Organizational Behavior and Theory | Physical Sciences and Mathematics

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E-Business:

REVOLUTION, EVOLUTION, OR HYPE?

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Two years ago it was widely accepted that we were in the grips of an e-business revolution. According to many, we were set to move into “hyper growth,” with trade over the Internet reaching trillions of dollars.¹ The Internet and e-business were leading topics of popular attention, as evidenced in TV shows and the fascination of investors. Indeed, many investors, large and small, were convinced that an economic miracle was underway—driving the valuation of “virtual” firms to the level of an Internet Bubble.² A survey found executives believing that the Internet would have major impact on global business by 2001.³

As we all know, the bubble burst in April 2000 and the impact was certainly not one those executives might have predicted. By March 2001, the NASDAQ was back to its pre-bubble level, forecasters were scaling back their projections and e-business luminaries such as Jeff Bezos were advising investors against Internet stocks.⁴ These warnings came too late for those investors who had lost their money on the many spectacular failures that occurred over this period. Some Internet boosters were even calling for “netizens” to show their support for the online economy to combat what they saw as a “viral lack of confidence.”⁵ In just two years, we have gone from heralding the second Industrial Revolution—Business 2.0 in the eyes of the revolutionaries—to intense pessimism.

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It is timely and appropriate to take stock of this "revolution." It is appropriate because, just as the hyperbole of the 1990s was clearly overblown, the pessimism of 2001 is also an overreaction. Internet usage continues to grow strongly throughout the world and, in contrast to the failed dotcoms, many traditional firms have found viable applications for Web technology. For example, in a recent survey of 400+ large listed companies, 20 per cent indicated that they had successfully implemented web-based applications.⁶ What is at issue is not whether the Internet facilitates communication or provides access to information and entertainment. It does all of these things and more. The Internet itself may indeed represent a revolution in communication. Yet to us the real, and still unresolved, issue is whether it represents a revolution in the *conduct of business*. Will the visionary predictions about e-business ultimately be proved correct or will the reality be more mundane? Will a significant proportion of economic activity, be it B2C or B2B, be transacted through the Web or only a minor amount? Will the Internet be a pervasive business technology—as some still predict⁷—or simply a niche application?

It is appropriate to take stock because many firms are uncertain about their answers to such fundamental questions of strategy, and with good reason:

- We have gone from boom to bust in a short period of time. The 80 per cent rise in the NASDAQ in a period of slightly more than a year was probably always going to be unsustainable. However, the subsequent dramatic collapse to pre-bubble levels has still damaged expectations around Internet pure plays and must therefore engender caution among the managers of the *Fortune 500*.
- Having experienced disappointing results in the past (e.g., BPR), managers are cautious about large IT investments, particularly suggestions that IT be elevated to core business strategy levels.
- The pragmatic difficulty of implementing complex IT strategies is another, altogether more difficult, task. Despite the money invested in consulting advice over the past decade, managers have struggled with the same set of implementation problems.⁸
- The competitive necessity for e-business varies considerably from industry to industry. Firms are exposed to wide-ranging levels of competition, from slow- to fast-moving traditional rivals and Internet-based newcomers. In some industries, e-business is a threat; in many, it is not.
- The promises of Internet-driven economic growth may actually be more hyperbole than substance. We should question the pace at which the "networked" economy may emerge and, indeed, the ultimate suitability of electronically based business for many firms.

With most revolutions, those participants immersed in the events may not know that they witnessed history until historians have told them that something truly spectacular had occurred. For example, can we say with certainty whether the crash of 2000 signals the death of an over-hyped technology or

does it simply signal a “little slowdown” in the transition to a fully networked economy?⁹ In spite of the negative effects of the crash, one study finds that nearly 80 per cent of firms surveyed are increasing their level of investment.¹⁰ Only with some understanding of the economic forces at play can we hope to make sense of these opposing views and assess whether current events are pointing more toward one of these extremes or toward some middle course.

A revolution can be defined by the breadth and depth of the changes it makes in the everyday lives of individuals. In this sense, what we have and are witnessing in terms of the changes wrought by transistors can be justifiably thought of as being revolutionary.¹¹ Similarly, the Internet as a low-cost communication tool may also have revolutionary social impact. However, *e-business* cannot claim, at this time, to have radically changed the way the majority of people shop or the way most business is conducted on a day-to-day basis. Thus, current events point us more towards an incremental evolution for e-business than a revolution. Such incremental evolution is illustrated by Tesco’s cautious and “low-tech” approach to online grocery sales, which has resulted in the only current success story in this sector of e-business.¹²

This distinction between evolution and revolution is important. If we are witnessing evolution, this is familiar territory for most managers. If we are witnessing revolution, this is uncharted territory where irreversible commitments and new strategies are needed and firms may fail. To form a better judgment as to which is more likely, we ask two important questions: where is e-business concentrated; and why is e-business occurring as it is?

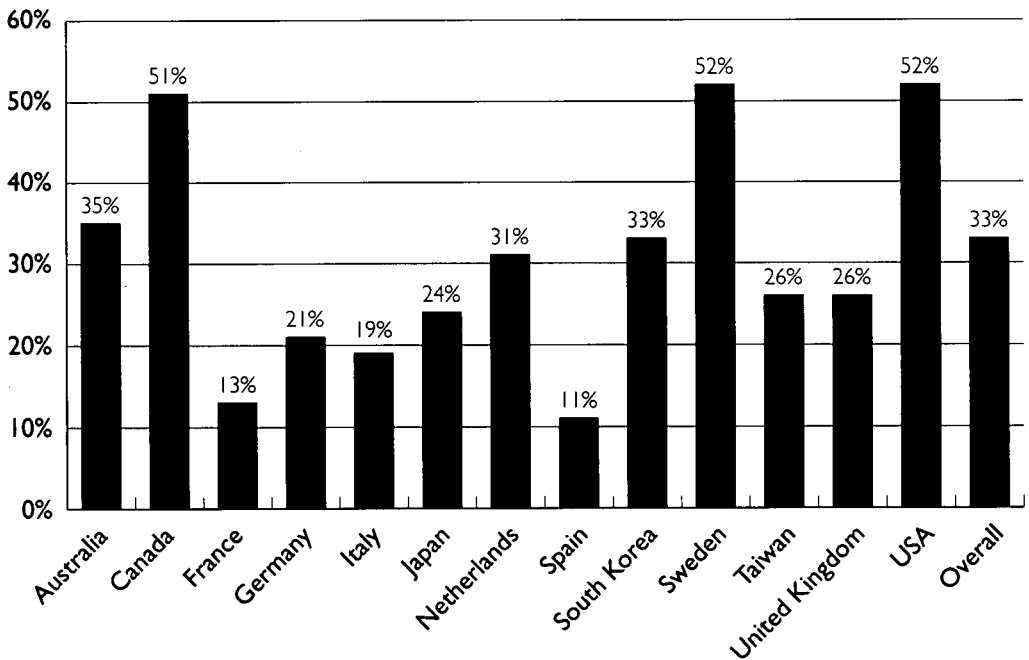
Where Is E-Business Concentrated?

One of the valuable lessons from prior encounters with technological change is that there is often a difference between *espoused theories* (what we say about the technology) and *theories-in-use* (how we actually use the technology).¹³ Nowhere was this difference more evident than during the Internet bubble. The espoused theory was that, while the Internet would impact all forms of business, the greatest impact would be in consumer markets. The B2C “revolution” was promoted as offering consumers 24/7 convenience and lower prices and offering firms the opportunity to build closer and more personalized relationships with their customers. The less glamorous B2B “revolution” emerged a little later. This was also touted as having major impact, particularly in integrating supply chains and reducing transaction costs.

Technology-In-Use

At present the PC is the dominant platform for network connectivity and according to statistical sources two-thirds of adults in the developed world still lack or choose not to use the Internet on a weekly basis (Exhibit 1). Even in the most networked countries, only half the adult population accesses the Internet, either at home or in the office, on a weekly basis. For those who do, the Internet

EXHIBIT 1. Penetration of Adult Internet Users at Year-end 2000
(% of the Adult Population Who Use the Internet Every Week
either at Business or Home)



Sources: Computer Industry Almanac, CIA World Factbook.

has proven to be more of an addition to their lives—sometimes helpful, at times entertaining, often slow and frustrating—than an indispensable part of their lives.¹⁴ For the average household, e-mail provides a useful and cheap capability to communicate asynchronously. Although at times difficult to navigate, the ability to retrieve information has been a beneficial innovation. Yet despite the convenience of purchasing items online, only a small proportion of consumer spending has migrated onto the Internet.

To date, the beneficiaries have been those selling books, toys, CDs, and computer equipment. Few of these have Internet sales that claim a significant share of their respective markets, even for the highly discussed category of books “e-tailers” claimed only 6 per cent of book sales in the USA in 2000.¹⁵ The only category where online sales have reached major proportions is airline tickets, with 58 per cent of tickets being sold online in the USA in 2000.¹⁶ There is as yet little evidence suggesting the widespread transferability of profitable electronic business models to other consumer markets. For example, companies such as Peapod and Webvan (deceased) invested millions of dollars into solving

a mundane problem most of us face every week, shopping for groceries. Yet despite the best efforts of these companies, less than 1 per cent of U.S. households order groceries online.¹⁷ The empirical evidence suggests that many see this task as one of life's small social pleasures that they have no intention of giving up. Additionally, the information asymmetry problem means that many of the products and services we purchase have to be seen, felt, or touched before they can be appreciated. There are still many barriers to be overcome before we can even begin to speak of B2C as revolutionary—i.e., changing the outlook and behavior of consumers in a fundamental way.

Indeed, most businesses are less interested in selling online to consumers than in using the Internet to interact with suppliers and large buyers. There are several reasons why businesses are more willing than consumers to communicate, negotiate, and buy and sell online:

- Companies—and, in particular, larger companies—are better equipped to communicate electronically. They have the computers, networks, and bandwidth to make Internet use faster and more convenient.
- Companies are more cost-conscious—every dollar saved in procurement equals a dollar of new profit.
- Network externalities will have a strong impact, as corporations develop supply chain applications aimed at reducing costs and increasing efficiency. The natural tendency for these companies will be to encourage others to do the same and generate further efficiency gains.
- The diffusion of innovation literature has shown that products consumed in the workplace diffuse more rapidly than products consumed privately in one's own home.¹⁸
- Many business transactions are already conducted at a distance, by facsimile, mail, or EDI. These are easily translated to the Internet.
- Opportunities to create close alliances with business partners can offer innovative opportunities to form strategic relationships or address customer problems in new ways.

For companies such as Ford, General Electric, Dell, and Cisco, the movement of products from detailed designs to basic commodities through a supply chain is where the real value in e-business will be found. With prescience, Aberdeen's David Alschuler stated in 1999 that "the fact is, business on the Internet is cutting significant cost out of the supply chain, with better procurement and resource planning. That stuff shows up as line items on balance sheets of companies like Intel, but in the long run, that will have a far bigger impact than what you buy from Amazon."¹⁹

Although predictions about the impact of e-business on supply chains have also been revised downward post-bubble, they still remain significant. For example, the Gartner Group expects some \$6 trillion in global B2B transactions to be made online in 2004—predictions that are backed by emerging evidence of the real savings that can be made in such transactions.²⁰

As we enter a new phase in e-business development, established firms—branded goods suppliers, physical retailers, and financial service providers—are beginning to get involved with the networked economy. This will shift attention from growth strategies adopted by start-ups (i.e., Amazon and E*Trade), towards strategies that deliver sustainable competitive advantage for large, well-established firms (e.g., Unilever, Carrefour, General Electric, and Citibank).

Why Is E-Business Occurring as It Is?

In the six years since the browser made the Internet accessible to the broader community, the novelty has begun to fade and some of the early fears around electronic transactions have begun to subside.²¹ In many countries, there are signs of a general maturing of the community of users and the impact the Internet will have on the lives of ordinary people is becoming clearer. For business, however, the answer to that all-important question of how to make money is much less clear. Despite billions of dollars in investment, firms are still struggling to find the best way to complement traditional activities or develop new electronic lines of business. In part these difficulties might be ascribed to the problems of understanding, entry timing, and resource commitment that firms (particularly incumbent firms) encounter when faced by an emerging technology.²² However, any such problems have been exacerbated by the diffuse and ill-understood nature of Internet technology, particularly its application to business transactions. For example, by 1998, firms had tested no less than eleven distinct e-business models in the marketplace.²³ Most of these subsequently failed, leading some to suggest that managers became so focused on IT innovation that they failed to apply the underlying principles of business.²⁴ These problems of business application persist to the current day. They include poor understanding of the costs and benefits of e-business technology and therefore uncertainty about eventual returns to investment. They also include significant difficulties in building usable customer interfaces, integrating e-business with legacy IT systems, or aligning organizational structures with new business models.²⁵

Although the end game is still distant, e-business has so far failed to transform business in a significant way. Certainly we have seen savings in the time and cost of routine tasks (i.e., buying and selling shares, tracking inventory, and delivery schedules), but few of the visionary predictions concerning the e-business revolution have materialized. The most salient insight emerging is that the principles that have governed business success for centuries remain largely the same. Despite the hyperbole, the ability to predict the future is still firmly grounded in the past. Exhibit 2 summarizes these visionary predictions and our assessment of the current reality.

Brands Will Die!

A common belief was that the low setup and distribution costs associated with the new electronic capability would enable a one-person business to make

EXHIBIT 2. E-Predictions and E-Reality

Prediction	State of Current Reality
Brands Will Die! The Internet represents a major threat to brands, making brand strength weaker than ever before.	In an over communicated environment, the Internet provides no guarantees of customer attention or increased search. It is likely, therefore, that users will continue to gravitate towards brands as a way to simplify choices, minimize search and build trust. Cognitive 'lock in' to branded Web sites may amplify these effects. Thus brands remain as powerful a marketing tool online as they were offline.
Prices Will Fall! E-business will lead to more efficient markets and lower prices.	Reduced information exchange and coordination costs have enabled firms to capture a larger part of the customer value proposition. While the cost of getting the right item to the right customer has got cheaper, there is no guarantee that this will result in lower prices. Speculation about whether prices will go up or fall is something of a red herring.
Middlemen Will Die! In every industry—from retailing to insurance—the key impact of the computer-network revolution is to remove the middleman.	We have still seen few examples of successful disintermediation resulting from e-business investment. This has nothing to do with whether profits are possible. Rather, it has everything to do with the difficulty of working out how to move into a new distribution channel without jeopardizing existing channel relationships.
Scale Is Irrelevant! Esther Dyson, has suggested that size will be less important for online firms.	Networks, be they real or virtual, work to a relatively simple logic. The larger the network, the more attractive it is to users. Markets for portal companies (e.g., Yahoo.com), hardware (e.g., Intel) and software (e.g., Microsoft) all provide recent examples of companies deriving increased value from wider reach. Equally standardization of inter-organizational systems will require governance mechanisms and large firms will leverage their bargaining power to encourage co-operation among channel members. Such co-operation is often in the best interests of the large firm.
Being First Is the Key! In the networked economy, speed is God and first movers will reap the rewards.	There is no guarantee that pioneering firms like Amazon or eBay will be able to maintain their position as the market evolves. Information technologies, by themselves, will not produce sustainable competitive advantage and pioneers must be careful not to develop the 'wrong' resources. Provided the pioneer has failed to build a defensible position, the early follower is often well positioned to exploit their existing resources and core competencies. In many cases, the early follower has complementary assets (e.g., brands) that will be their basis of competition.
Winner Take All! In the networked economy, the first to develop an advantage will capture all the rewards.	Markets with distinct segments of customers or firms with valuable offline capabilities will allow more than one firm to capture rewards. While it is possible that the Web might lead to greater concentration of site traffic, it is an unresolved question as to whether this will lead to profit dominance.

its virtual storefront available to as many customers as reached by bigger firms. This would be possible through the use of intelligent agents and search technologies that would reduce search costs and enable customers to compare products and prices anywhere in the world easily. Such comparisons would erode the overall role of the brand in choice as well as threaten existing brands commanding price premiums.²⁶

Evidence indicates that these predictions have yet to approximate reality, indeed the role of the brand appears just as important in online purchasing as it does offline. Commercial surveys report that consumers believe brand names play a significant role in their online buying decisions and Internet pure plays have spent vast amounts on traditional brand-building exercises.²⁷ As Barwise argues, in a busy, "over communicated and untrustworthy world," consumers continue to gravitate towards brands as a way to simplify choices.²⁸ He suggests two reasons for this: brand names can act as substitutes for information gathering, helping online buyers locate specific products; and brands build trust, security, and expectations of quality.

More recently, evidence has emerged that individuals do not use the Web to search more exhaustively, despite its lower search costs. Indeed, the emerging picture is that many focus on one web site in their purchase category of interest and seldom look at competing sites. This has been attributed to "cognitive lock-in."²⁹ That is, once the customer has invested in learning how one site works, there is little incentive for them to incur the costs of learning others. If this is the case, then it is likely that the strength of the brand continues to be important, particularly in influencing the customer's choice of which web site to learn. As a final nail in the coffin of theories suggesting increased search, comparison sites such as Brandwise (see sidebar) have proved unpopular. Brandwise existed to make it easy for consumers to compare home appliances and was backed by major players. However, after having failed to attract either traffic or further funding, it closed its doors. Despite the increased availability of information, the Internet provides no guarantee of increased search or customer attention, and traditional branding lessons still apply.

As well as these customer-based reasons for the importance of brands, there are also competitive rationales. There is a long tradition of research in industrial economics showing the potential for strong brands to act as an entry barrier to other firms. For example, Schmalensee documented how incumbents could deter market entry by proliferating their brands.³⁰ Others have shown not

R.I.P. Brandwise.com, November 2000

Brandwise.com was a comparison-shopping web site designed to assist consumers in narrowing down their selections from the plethora of products currently available in the marketplace. As a joint venture between Whirlpool, publishing firm Hearst, and The Boston Consulting Group, the venture claimed to provide independent customer advice.

A consumer laboratory examined all washing machines, dryers, refrigerators, microwaves, dishwashers, and cooking units available in the marketplace and reported their advantages and shortcomings. Brandwise.com also hosted chat rooms where customers could ask for advice from other customers who bought the same machines.

only that such proliferation is a common strategy,³¹ but also that proprietary assets such as brand names provide “effective deterrents,” even to challenges from innovative competitors.³²

There are three main factors with regard to how brand strength can be enhanced by an online presence: the brand’s ability to attract attention, the nature of the brand appeal, and the level of customer involvement with the product or service category.

- *Ability to Attract Attention*—Is the brand capable of attracting customers to the firm’s Web site and thus facilitating cognitive lock-in? This factor favors incumbents with well-known brands, though novel new brands backed by significant product or service innovations have scope to enter or create markets. This scope is little changed from the pre-Web era—e.g., it is hard to displace entrenched competitors and even harder to create new markets. Another element in creating attraction may be the breadth of assortment offered. It is striking how many of the sites with strong brands offer many products or services to their customers. This observation can be made about manufacturer brands (e.g., Dell), retail brands (e.g., Amazon) and portals (e.g., Kelkoo). We speculate that low search and cognitive lock-in may also be connected to the choice of a site that provides convenient access to a broad assortment. Firms with narrow product lines may need to promote themselves through intermediaries—just as they did before the Internet.
- *The Nature of the Brand Appeal*—Is branding used to convey beliefs regarding product attributes (e.g., UPS same-day parcel delivery), or is it based more on emotional associations (e.g., L’Oreal cosmetics)? Attribute-based branding may be more suited to the informational nature of the Web interface while emotion-based branding may require a more dynamic medium than the Internet can currently deliver.³³
- *Level of Customer Involvement*—Is the product category a high involvement one such as cars, which requires deliberation prior to purchase, or is it a low involvement one such as candy that simply requires action rather than deliberation? Again the nature of the Web better suits thinking and feeling before action as opposed to thinking and feeling after action.

While combinations of these three factors potentially create many scenarios, most do not suit the Internet except as a complement to more traditional marketing approaches. However, two scenarios are of interest. First, strong brands can be reinforced online, in a major or minor way depending on the nature of their original appeal. Second, new “cyberbrands” can be created where existing brands are weaker or do not exist or where the Web interface suits the appeal significantly better than the traditional media does.

- *Brand Reinforcement*—Most buyers require assurances that goods are unused, properly identified, and legitimately obtained before they will source from an unknown supplier. This tends to favor larger, incumbent

brands, like L'Oreal and Charles Schwab in the consumer marketplace, or independent distributors, like NECX in the business marketplace. This is especially so for customers who feel more secure dealing with a known brand. Even though many incumbents are just starting to move their businesses online, the strength of their brand may continue to provide distinct advantage—particularly where they have greater ability to attract customers to their site or where the nature of the appeal requires expertise in a range of media. Whether the Web becomes a major or minor component of their marketing strategy will depend on the nature of this appeal and the customer's level of involvement. For example, it is harder to see the Web as a major component in sales of cosmetics (emotional appeal, high involvement), ice cream (emotional appeal, low involvement), or detergent (which while an attribute appeal is also low involvement). In contrast, for automobiles (attribute appeal, high involvement) the Web can play a significant role in pre-purchase search.

- *Cyberbrand Creation*—Companies like eBay and Amazon are examples of a small number of cyberbrand companies, aimed at providing total customer-centric solutions. These cyberbrands are all-encompassing and link promotional strategies with web site design and payment with distribution to provide a fully integrated solution. They are also attacking relatively fragmented markets with an appeal that suits the Internet medium and with a significant level of innovation in the service delivered to their customers. Moreover, participation in an auction or the purchase of a book requires a reasonable level of involvement from these customers. Cyberbrands such as these have opportunities to play a powerful role and compete directly against many traditional brands.³⁴ This notwithstanding, the incumbents are still in a strong position; a fact recognized by those cyberbrands that made marketing investments to build brand awareness and attract customers to their sites. Equally important is the need to create a relationship of trust with customers as evident by the recent acquisition of traditional companies by Internet start-ups. The acquisition of Butterfield and Butterfield, a highly respected firm of auctioneers, by eBay represented a deliberate attempt to improve the cognitive association between the eBay brand and its services. Online as well as offline, as the Boston Consulting Group notes, "The brand is everything and everything is the brand."³⁵

Prices Will Fall!

Espoused theory also suggested that a combination of increased competition and improved price discovery would transform market efficiency and thus dramatically reduce the price of goods and services traded online. Although the networked economy can provide opportunities for lower prices, the same infrastructure can also be used to collect customer and competitor information in ways that maintain an incumbent's oligopoly power. For example, much is

made of the Web-bot technology that allows consumers to scour the web for the lowest car price, mortgage rate, or airline tickets—a technology clearly aimed at lowering prices. However, there is nothing to stop competing firms from using a similar technology as a means of coordinating behavior and keeping prices high. It was not so long ago (the early 1990s) that the airlines were caught using their reservation systems as a means of signaling price increases. Adam Smith was worried that “people of the same trade seldom meet together, even for merri-ment and diversion, but the conversation ends . . . in some contrivance to raise prices.” The web can make such “contrivances” virtual.³⁶

The one thing we can be sure about is that prices will continue to vary as sellers utilize individual strategies to avoid commoditization. The real question is whether or not this increases or decreases consumer surplus and where the producer rents accrue. One positive outcome would be for firms to use their access to online information and coordination to deliver products in a more effective way, leading to a possibly higher final price but with a greater overall value proposition to customers. In this way, the Internet provides not just a redistribution of rents, but also the creation of value through the reduction of deadweight loss due to informational inefficiencies and transaction costs. On the downside, firms could use a number of techniques to extract more rent from consumers, including: price discrimination and various versioning strategies; market segmentation strategies that make comparative shopping difficult; and exploiting the potential of cognitive lock-in to maintain or enhance price premiums.

Consider the case of a supplier who collects customer information using an online registration form. The customer is willing to divulge personal information in return for a customized service and has invested in learning the Web site. The supplier, in turn, uses this information to make inferences regarding the customer's beliefs, attitudes, and buying behavior. Based on this improved information, the supplier is able to differentiate the service in ways that target the customer's price limits, extracting maximum rents.

On the positive side, the value proposition to consumers is enhanced by integrating the value chain. For example, Shopfast.com, an Australian grocery shopping service, envisions a world where consumers will look to its company to maintain their household inventories in the same way that point of sales terminals do for stores. When a person takes a can of soup from their pantry, they can scan the barcode; this tells Shopfast that the consumer wants this item restocked. Then according to their delivery schedule, the soup, and whatever else was requested, would be delivered to the customer. Although Shopfast.com will not charge you less for the can of soup, they will charge you less for the whole proposition of getting the can of soup into your pantry.

The main impact of e-business is the ability to reduce the cost of exchanging and processing information, thereby reducing the overall costs of customization—either between a producer and a supplier or a customer and a product or service provider. The potential is not that the bottle of Coke or metallic widget will necessarily get cheaper, but that the cost of getting the right item to the

right customer will get cheaper. Value system change has occurred where particular upstream and downstream activities have been opened up or better tailored to customer needs. Therefore, what we are seeing is a new transactional medium being formed that is designed to reduce deadweight losses. For example, the growing importance of auctions is not because we know more about auctions but that the medium allows us to use them in a greater variety of circumstances. Technology is allowing us to capture a larger part of the whole customer proposition. As such, speculation about whether prices will rise or fall is something of a red herring. They could go up or down. Whether it will be the customer, supplier, or intermediary who captures any surplus from this efficiency gain is an altogether more complex question than popular theory purports.

The empirical evidence is consistent with the hypothesis of an incrementally more efficient medium rather than a price revolution. For example, the real prices of books and CDs were some 9 per cent to 16 per cent lower through online retailers than through traditional booksellers in 1998 and 1999.³⁷ For another, the growth of the Internet has reduced the prices for term life insurance by some 8 per cent to 15 per cent.³⁸ A study of internet retailing of automobiles showed a savings of \$450 per auto,³⁹ driven by a combination of business being picked up by cheaper dealers, lower customer service costs, and the bargaining power of the referral service. In the B2B space, both case studies and commercial data suggest somewhat greater price reductions in the order of 14 per cent to 19 per cent.⁴⁰ However, these price reductions come at a cost in terms of IT implementation, systems integration, and human resource utilization that are daunting for many firms.⁴¹ Two other features of these data are perhaps more interesting, namely, auctions and price dispersion.

- *Auctions*—Studies of Internet auctions for used cars have suggested that the price levels attained over the Internet may be higher than in traditional auctions. As noted by Smith et al., an auction market is inherently different to a retail market and “higher prices may be a signal of more efficient auction markets *ceteris paribus*.”⁴² This depends on the liquidity of the market—with greater liquidity improving the match between buyers willing to pay and sellers willing to sell—and the number and types of buyers and sellers. For example, creating a global yard sale out of the millions of local weekend yard sales may be more efficient but does not necessarily lead to lower prices, particularly if the number of bidders is less limited than the number of items for sale. Whether a price rises or falls depends on whether the reach of the Internet increases the relative number of buyers or relative number of sellers compared with those found before in local markets.⁴³
- *Price Dispersion and Competition*—Studies show that while consumer prices may be somewhat lower on the Internet, price dispersion between retail brands is significant, persistent, and similar in magnitude to that observed in traditional markets.⁴⁴ This has been ascribed to brand specific factors

such as trust and awareness—that is, to the way the retailers compete. This is the key issue: whether price levels rise or fall or whether price dispersion increases or decreases is at least partially dependent on the patterns of competition that evolve between online players. As in the offline world, these players can choose to create undifferentiated commodities sold on price alone or they can choose to create differentiated value propositions.

Firms can resist comparison-shopping and price erosion by customizing or personalizing the online service experience on the basis of information received from each customer. However, it has been shown analytically that the payoff to such customization accrues to those firms that lock-in large numbers of customers early. This creates an effective information barrier to entry that enables these firms to increase price according to their customers' perceptions of increased value. Later firms are unable to capture the same data from these customers, thus failing to imitate the value-adding strategies of the earlier firms effectively and being led to adopt lower prices.⁴⁵ This finding demonstrates that any discussion of whether price levels rise or fall, or whether dispersion increases or decreases, must reflect the patterns of competition that emerge in the market of interest. We are still in the early days of competition on the Internet and stable industry structures may not emerge in many such markets for some time. Can we guarantee that book prices will continue to fall if the duopoly of Amazon and Barnes & Noble—with their huge customer databases—comes to dominate book retailing?

Middlemen Will Die!

The late 1990s were to be the age of disintermediation. Futurist George Gilder wrote that "in every industry—from retailing to insurance—the key impact of the computer-network revolution is to remove the middleman."⁴⁶ Through Internet technology, every manufacturer would be able to sell direct to the public. The traditional sales force would be eliminated and we would witness the demise of the middleman. However, the computer vendor Compaq provides an example of the risks associated with such simplistic strategies (see sidebar). The Compaq story is one that other firms are loath to repeat. The combination of intermediary power and their proximity to the customer are the main reasons why we have seen few successful examples of disintermediation. This has nothing to do with whether or not profits are possible from disintermediation. Rather, it has everything to do with deciding how to move into a new distribution channel without jeopardizing existing channel relationships. As noted by Carson et al., just because something is feasible and preferable is only a necessary, and not sufficient, condition for its adoption.⁴⁷ Institutional structures, such as intermediaries, satisfy the complex requirements of customers and suppliers that cannot be unraveled overnight.

Value as well as price characterizes purchase decisions and adept intermediaries can exploit new business models to provide customer value. As shown in

Compaq Australia

Compaq's logic was straightforward enough, eliminate reseller margins and utilize the savings to go direct to customers with a customizable, price-competitive product. Unfortunately, the reality was not quite that simple. In Compaq's case, its success has been determined largely by its long-standing, close channel relationship with resellers. Not surprisingly, when these resellers learned of Compaq's decision to sell direct to the customer, they let their displeasure be known.

Compaq Australia has been on the receiving end of this displeasure, when *all* Compaq products were tossed out of the country's leading retail outlets. The cost to Compaq Australia of the debacle is estimated at A\$100 million in lost revenue.

The Australian, August 24, 1999

In April 2001, Compaq Australia reopened discussions with leading retailers with the goal of having its products put back on their shelves.

The Australian, April 17, 2001

Exhibit 3, there are still a number of opportunities for intermediaries to implement electronic versions of traditional business models or to create new value-added business models based on high levels of IT functionality.

While it is inevitable that competition will eliminate intermediaries who fail to add value, low barriers to entry and information asymmetries will continue to attract innovation. In the networked economy, intermediaries with a sound understanding of the hypermedia environment will be able to capture customer and product information in ways to ensure they have an important role to play. Indeed, some argue that an increase in the number of intermediaries is equally plausible as any predicted demise.⁴⁸ They point to the new economies of scale, scope, and knowledge that will allow new forms of "cybermediaries" to flourish and they also argue that the supplier cannot easily assume many of the functions of these intermediaries. For all these reasons—institutional structures; new economies of scale, scope, and knowledge; and competence—it is premature to announce the death of the middleman.

Scale Is Irrelevant!

Esther Dyson, chair of the Electronic Frontier Foundation, suggested that the Internet would change economies of scale in favor of the little guy, creating a flatter competitive landscape. As a result, online firms would face less pressure to grow and benefit from economies of scale.⁴⁹ This is inconsistent with the lessons of history, which have shown that the size of the firm or the network tend to produce a simple logic. In the case of the network, the larger the network the more attractive it is to users. The phenomenon of *network externalities*⁵⁰ is illustrated in transportation, telecommunications, and banking networks. An oft-cited example of networks externalities is the competition between the Beta VCR format of Sony and the VHS format of Matsushita. By licensing their technology to others, Matsushita was able to build scale rapidly and overcome the head start of the pioneer Sony. Markets for portal companies (e.g., Yahoo.com),

EXHIBIT 3. Examples of Value Adding Intermediaries

Business Model	Value-adding Capabilities	Internet Example
E-Auction	Price discovery and demand collection systems where customers state product/price preferences which are forwarded onto suppliers for consideration	Priceline (www.priceline.com) Online Auction Sites: eBay (www.ebay.com), QXL (www.qxl.com)
Value Chain Integrator	Offering complementary goods, services which aggregate information rich products into a more complete package for customers	Car Dealership, Insurance and Automotive Accessory Aggregators: AutoByTel (www.autobytel.com) Carpoint (www.carpoint.com)
Value Chain Service Provider	Specialize on particular value chain function such as electronic payment or logistics	Package and Shipping: FedEx (www.fedex.com), UPS (www.ec.ups.com) Global Interbank Transaction Settler: SWIFT (www.swift.com)
Information Brokers	Privacy and trust providers, business information and consultancy advice	Public Key & Certification Authority: Verisign (www.verisign.com) Seller Rating Service Provider: Bizrate (www.bizrate.com) Search Engine: Yahoo.com (www.yahoo.com)

hardware (e.g., Intel), and software (e.g., Microsoft) provide more recent examples of companies deriving increased value from wider networks. It should be noted that some have argued that while network *effects* are pervasive (whereby the value of joining the network increases with the size of the network), network *externalities* (whereby one actor owns the gains from the network effect) are uncommon.⁵¹ This would not go against the basic argument that scale remains important, but would suggest that it is difficult for one firm to capture *all* the benefits of scale.

This can be seen in the example of Netscape. By its early use of the Web to distribute free software, Netscape was able to build scale in its customer base quickly. The more consumers using the Netscape browser, the more opportunities this created to extend Netscape's product range and to sell complementary products (i.e., enterprise software) and services (i.e., a one-stop portal). Economies of scope became so powerful that, as seen from its mission statements, Netscape no longer considered itself a browser company. However, it then failed to take full advantage of these network-derived economies of scale and scope to build revenue quickly enough and was overtaken by Microsoft in the browser market, leading to a collapse in its share price and takeover by AOL.

Whether real or virtual, the amount of strategic, physical, and monetary resources a firm can bring to the competitive arena will continue to play

a critical role in the networked economy. Inter-organizational systems require standardization over a wide range of rules governing the size of data fields, format type, and various operating characteristics. Large firms usually have greater bargaining power and are often able to encourage co-operation among channel members—thereby establishing de facto standards. Such co-operation is often in the best interests of the large firm. Large firms also have greater resources for developing and protecting their brands and are able to absorb short-term losses in order to mitigate the challenges posed by their smaller competitors.

Amazon provides an example of the importance of scale and resources. Having invested considerably in building its brand strength, the company is leveraging its network to provide a value-added service that goes beyond lower prices. By storing information from various sources—authors, magazine reviews, and reader comments—the company has developed a powerful information service for its customers. The more books you buy, the more proficient the company's software becomes at identifying your preferences and finding a book that you might like—differentiating the company from smaller competitors and creating powerful lock-in and barriers to entry. As our Netscape example shows, this will not necessarily protect Amazon from other large competitors, like Barnes and Noble or Bertelsmann, but it will surely make it difficult for the smaller players in book retailing to compete.

Being First Is Key!

Silicon Valley worships trailblazers and speed to market. To gain an edge in the new economy, there is no time to analyze and plan; being first is enough to create an advantage.⁵² *Playboy* magazine was able to extract first mover advantages when it decided to distribute the magazine electronically in 1995. As the first commercial Web site, the venture was novel, attracting the attention of large numbers of Web surfers and a healthy fee-paying subscriber base.

Whether the success of *Playboy.com* was a result of pioneering advantages, or whether it was due to its size, brand name, resources, and management capabilities is an important question. The existence of first mover advantages has been a widely espoused business principle as entrepreneurs and established corporations compete in a race to be first to market. Unfortunately, the empirical literature on first mover advantages is still undecided and no clear position has emerged that supports the existence of enduring advantages to market pioneers. Recent research suggests that being first to market can be beneficial, but, by itself, is neither necessary nor sufficient to maintain a company's position as the market evolves. Pioneers often miss the best opportunities by failing to: develop the right strategic resources; leverage the mass market opportunities that are presented to them; commit the necessary financial resources as the market evolves; dominate in distribution, R&D, production or brand awareness; and get the technology right on the first go.⁵³ A classic example of this failure is the Apple Newton.⁵⁴

In new markets like e-business, the magnitude of any first mover advantage is proportional to the size of the market. Although the time to a critical mass of consumer demand in these markets is getting shorter, in most cases it still takes years to develop. In an industry dominated by rapid technological innovations, high-risk investments, and market uncertainties, the chances of developing the wrong strategic resources is a very real concern for managers. Many pioneering efforts may prove poorly directed—leaving opportunities for others to capitalize on the learning and opportunity.

If the pioneer has failed to achieve lock-in with large numbers of customers or to otherwise build a defensible position, the savvy early follower is often well placed to exploit their existing strategic resource base and core competencies. Leveraging a nine million strong client base—which is larger than all the online brokers combined—Merrill Lynch was well positioned to challenge online pioneers such as Ameritrade and E*Trade. Having watched the pioneers test the market, Merrill Lynch implemented its own unique business model, providing investors with a valuable mix of human advice and online access. The same logic applies to BarnesandNoble.com as an early follower into online book retailing (see sidebar). While the online leader, Amazon, was not the first online bookseller, it was the first to build online demand successfully through a series of well-known innovations. In contrast, BarnesandNoble.com is attempting to leverage its brand and large chain of physical stores into a major online presence. According to some, it is closing the gap on Amazon through features such as more convenient return policies and human interaction.⁵⁵

Barnes and Noble

Amazon.com was established in July 1995 with “a mission to use the Internet to transform book buying into the fastest, easiest, and most enjoyable shopping experience possible.” It took Barnes and Noble some time to realize the emerging threat of Amazon and develop a strategy to combat Amazon’s strengths.

BN.com, while slow to emerge, has leveraged its existing competencies to compete with Amazon. These competencies include brand, warehousing capacity, retail store integration, and existing links to media outlets (e.g., the Oprah book club) and other chains (e.g., Starbucks), as well as the trust and recognition that they have with existing “real world” customers.

The emergence of BN.com, and the pressure they exerted both exogenously (as a competitor) and endogenously (through their influence on book suppliers), has seen Amazon rethink parts of its own strategy—particularly with regard to holding of inventory and fulfillment requirements. More recently, Bertelsmann—with its global strengths in direct marketing and in book and music publishing and its growing interests in the electronic distribution of content—has become a major shareholder in BN.com. This creates further competitive pressure on the leader, Amazon.

The choice of being a first mover is a critical one for managers, yet the evidence provides little guidance. It is not clear which e-markets are amenable or antithetical to first movers, hence there is no guarantee that firms like Amazon will maintain their leadership as the market matures.

Winner Take All!

Entangled with the exhortation to be first, espoused theory also claimed that digital markets would be less forgiving than traditional ones.⁵⁶ The first firm to “win” would capture most of the rents available from their marketplace, and other players—even those competent in their field—would be marginalized. The winner-take-all economy would thrive by leveraging network externalities and improved access to comparative information provided by a Web infrastructure.

In reality, the claim is neither new nor confined to digital markets. Evidence over several decades exists to show that technological change—driven largely by the print media, radio, and television—has tended to move moderately gifted individuals and organizations to the periphery. The necessity that individuals compete against world experts or champions has become most noticeable in the arts, entertainment, and sports, but it has also permeated business, medicine, and the halls of academe.⁵⁷ In this sense, winner-take-all markets are not new and have already wrought profound changes in economic and social life.

More recent research by Xerox PARC has shown that in terms of usage per site, digital markets follow a power “law” whereby a few top sites in each of the categories they studied accounted for over half the volume of unique visitors. They ascribe this concentration around a small number of sites to better marketing and site usability.⁵⁸ Formal work in economics has shown that a company with market power in two goods can, by bundling them together, make it harder for rivals to enter the market.⁵⁹ Microsoft Corporation offers the most successful example of how bundling is used to defend its products (Word, Excel, PowerPoint, and Explorer) from market competition. Others have shown that information goods are influenced by economies of aggregation that characterize supply- and demand-side economies of scale. Marketing managers can employ aggregation economics to price discriminate, increase the value of new content, and manipulate market entry and exit incentives.⁶⁰

Despite its intuitive appeal and the persuasive arguments, the winner-take-all argument is far from conclusive. The profit motives that underpin bundling are moderated by variance in consumer tastes. Current research has shown that, in situations where markets have dissimilar values for different products and services, the decision to unbundle can be more profitable.⁶¹ This research more fully explains strategic behavior and provides the intuition for why companies like Adobe and Real Audio choose to give away products rather than bundle document readers and audio players with complementary products.⁶² Simplistic assumptions that have been espoused about the capabilities of competitors and the nature of competition are open to question. As noted, the

Web might only be a complement to traditional marketing channels in many circumstances. In these circumstances, the offline capabilities of firms and the traditional nature of the competition between firms both become highly relevant. Winner-take-all might apply to the Web component of their activities but not to the other components, making the overall pattern of competition more complex than envisaged by some of these authors. More generally, there is the difficulty of capturing all the gains accruing from expanding networks.⁶³ Finally, although the Xerox PARC study identifying site traffic to be an important factor in commercial viability is noteworthy, traffic is not the only factor of concern. Similar "power laws" describe market share concentration in traditional markets where no one would claim that the winner had captured all the profits.⁶⁴ That is, the leading firm may have the highest profits but it may also have been unable to drive out or severely restrict the share of its competitors.

There is evidence for and against the winner-take-all thesis. The question as to whether the Web is more likely to lead to *profit* dominance or not remains unresolved. Our speculation is that in many low-involvement B2C markets it will not, but it might in those B2C or B2B markets where search and evaluation processes are more thorough and customers more likely to identify and select the best-performing firms (for example, B2C markets such as asset management for wealthy individuals or B2B markets such as the purchase of critical components).

Summary: Conflicting Worldviews

There is little doubt that the result of the e-business experiments occurring today will have a significant impact on the way technology is used in the social and business environment. While these developments in interconnectivity represent a major technological innovation, the question is whether this represents a paradigm shift in the way business is conducted. One side of the argument is that the fundamental rules that have governed businesses for centuries—supply versus demand, market competition, segmentation pricing, contracting, and the nature of governance in the firm—will remain as relevant today as they were when Adam Smith described the workings of a pin factory. According to this stance, although e-business will have a dramatic impact on many businesses and will demand new requirements from many managers, the basic rules will not be altered. This is the position put forth by authors such as Shapiro and Varian who attest to the durability of economic principles, even if some (e.g., network externalities and versioning) are relatively new and hard to find in traditional texts. In other words, there is no such thing as e-business, there is just business and some of it is electronic. The counter stance claims that the old rules of business will not apply and a sea change is underway in the operation of firms. Booz-Allen & Hamilton best represents this position:

The Internet is not just about e-commerce, however. The real story is the profound impact this medium will have on corporate strategy, organization, and business models. Our research reveals that the Internet is driving a global

market-place transformation and paradigm shift in how companies get things done, how they compete and how they serve their customers.⁶⁵

In other words, there is no business, bar e-business.

Is This a Revolution or Is It Evolution?

If we look on the industrial revolution as triggered by the development of engines, we would be rightly justified as saying that James Watt's steam engine was the trigger of the revolution to follow. If, however, we consider the industrial revolution as a triumph of man in the use of power—with a wide variety of consequences—then the industrial revolution is just one more event in an evolutionary sequence, namely, the replacement of human and animal energy with chemical energy. Clearly many people would espouse the first perspective, seeing Watt's engine as the trigger for a revolution in the way humans manipulate their environment, with widespread impact on social and economic activity. These impacts include the global transportation and distribution of people and goods through the railway and steamship as well as the gains in productivity and wealth that came from the steam-powered factory. Moreover, the industrial revolution came to touch *all members of society* not only in what they did in their daily lives, but in *how* they went about doing it. Castells defines the elements of a true revolution in a similar manner:

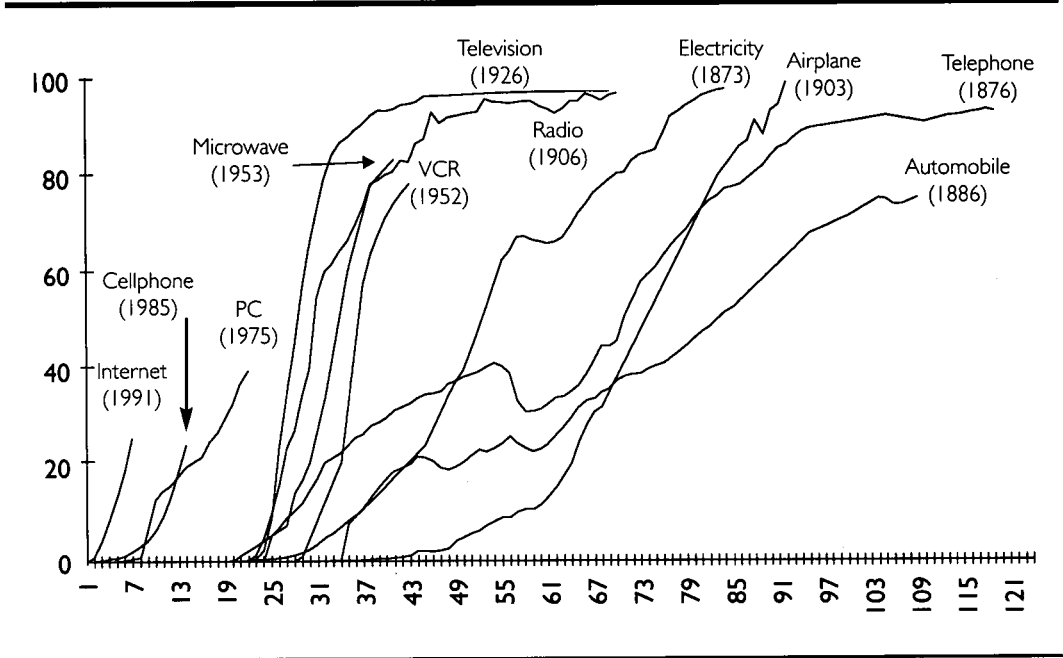
The historical record of technological revolutions . . . shows that they are all characterized by their *pervasiveness*, that is by their penetration of all domains of human activity, not an exogenous source of impact, but as the fabric in which such activity is woven. In other words, they are *process oriented*, besides inducing new products.⁶⁶

In short, a revolution is a historic transformation in the doing and thinking about things, and it is one that is brought about through the diffusion of transforming catalysts, be they ideas or technologies. Clearly, many people feel that the invention of business applications for the Internet satisfies the criteria for a "revolution." However, it is not the catalyzing technology that is in itself revolutionary. What makes it revolutionary is the complementary development of an ability to distribute and embed the benefits of this technology throughout the economy—an ability that is social rather than technological. For example, one of the many small ironies of the dawn of the 21st Century is that the backlash against globalization and technology is itself being coordinated and communicated through the Internet.⁶⁷

The Pervasiveness of E-Business

As we examine the historic record, major technological innovations have had relatively long periods over which they have diffused through the economic and social milieu. One of the hallmarks of the development of computers and the Internet that is often used to herald a "revolution" is the speed with which

EXHIBIT 4. The Spread of Technology (Penetration Rates Years after Introduction, Year 1 = Year Invented)



Note: The vertical axis is either the per cent of households with the product; air miles as per cent of 1996 level; motor vehicles relative to population over 16 in age. The horizontal axis is the years since invention of the product
Source: Dallas Federal Reserve Bank, in *Forbes*, 7/7/97

it has diffused. Exhibit 4 presents this information as well as the diffusion paths of other technologies over the past century. What is notable about this graph is that there has been a general increase in the speed with which *all* new inventions have diffused through the society over time. Hence, we are left with the currently unanswerable question, to what extent is the speed with which the IT related inventions have diffused across the economy a cause or a consequence? For example, the phenomenon of beanie babies was far more rapid than the uptake of any IT related technology. However, we would not look on the phenomenon of beanie babies as in any way revolutionary.

If we examine the up-take of computer technology and e-business, it is only with the maturation of IT industries in the 1990s that any claim to pervasiveness could be justified, and then only in certain sectors of advanced industrial economies.⁶⁸ If we look at the most recent figures on IT from OECD countries, while not ubiquitous in each sector of the economy, there are some clear trends emerging in the uptake and use of information technology. An important determining factor has been cost and its decline has been a signal of the maturing of information technologies. According to some,⁶⁹ the diffusion of Internet usage in the United States can be traced most notably to breakthroughs

in the quality and performance of IT that have been matched by equally dramatic falls in the costs of acquiring IT infrastructure.

This discussion indicates that, for many businesses, the advent of IT is not a pervasive phenomenon but that measures of diffusion may not be the most appropriate measure of pervasiveness. At best, diffusion must be thought as a necessary but not sufficient condition for pervasiveness to exist. For example, surveys have shown that despite widespread adoption of Web technology, at present most large established firms conduct relatively little of their value adding activity on-line.⁷⁰

The history of the industrial revolution also shows a remarkable degree of complementary development. For example, the industrial revolution was the confluence of three complementary events, a revolution in agriculture, a revolution in manufacture of textiles, and a revolution in power. Hence, another perspective on pervasiveness is embodied in the degree to which one phenomenon leads to change or development of complementary phenomenon. From this perspective, the Internet and, by association, Internet-based e-business are not stand-alone phenomena. Rather, the Internet represents an endogenous development linked, perhaps randomly, with the progression of related technology and the larger and somewhat more pervasive IT movement. To the extent that we take this one step further and talk about e-business, our ability to discuss this as a ubiquitous phenomenon loses some strength. It may be the result of a ubiquitous phenomenon but fails to be justified as such in its own right unless it can be shown to be the impetus for its own predecessor's formation.

A consequent issue is that the Internet and e-business could be pervasive not because they have affected a large proportion of business but that where they have had an effect, the effect has been dramatic. Hence, the key to claiming pervasiveness could lie in the productivity dividends that accrue through use of the technology. However, the evidence is not supportive of major dividends from IT:

[IT is] not ushering in a period of faster growth of output and total factor productivity. Rather returns to investment in IT equipment have been successfully internalized by computer producers and computer users . . . The rewards are large because of the swift pace of technical change in the production of computers and the rapid deployment of IT equipment through substitution, not because of spillovers to third parties standing on the sidelines of the computer revolution.⁷¹

We are left with the conclusion that e-business cannot pass a test based on the pervasiveness of the phenomenon at this time, particularly if we keep the discussion focused around commercial operations. Although basic IT infrastructure is pervasive from the standpoint of diffusion, much of this is substitution from one factor input to another—this is as much a shift along an existing production function as it is an expansion of the frontier of production possibilities.

Process Orientation

Process orientation is the key benchmark of any successful technology. In each of the industrial revolutions, the inputs that have brought about change have been linked to the successful orientation of process to technology. In the case of e-business, process orientation is linked to the informational characteristics of the businesses and, as a derivative of that linkage, the ability to network both internally and externally. Productivity gains are only possible once the technology has had an impact on process:

Simply providing a powerful new desktop tool won't transform the way people work together . . . Creating change throughout an enterprise requires a comprehensive solution that addresses the full fabric of organizational culture.⁷²

This suggests that process orientation is more about the changes that can be brought about within an organization's culture than it is about the diffusion of technology. Indeed, the history of the inter-networked enterprise has been described by some as an evolution of organizational processes rather than technological changes (see Exhibit 5).

Given the convergence of information technology and work practices, any claims to a revolutionary impact go against the grain of existing evidence. While the technology may be revolutionary, the process orientation itself is not. Process orientation is driven by factors of efficiency, economy, and effectiveness. These three factors will rarely, if ever, occur together as a direct result of revolutionary technological change. Because of the way people learn, it is impossible to match revolutionary technology with the evolution of work practice. People learn to adapt technology into their work process, while the technology feeds off this implementation. When presented with such a framework, one can argue, as does Castells, that what has occurred has been a result of an evolutionary process of IT integration into work practices and not as a result of a revolutionary vision for where IT would lead work practices.

EXHIBIT 5. The Alliance for Converging Technologies Framework

Process Orientation (The Promise)	Technology	Transformative Quality (Productivity Dividends)
The Effective Individual	Personal Multimedia	Task and Learning Efficiency
The High Performance Team	Workgroup Computing	Business Process and Job Redesign
The Integrated Enterprise	Enterprise Infostructure (Intranets)	Organizational Transformation
The Extended Enterprise	Interenterprise Computing (Extranets)	Recasting External Relationships
The Internetworked Business	The Net	Wealth Creation and Social Development

Source: D.Tapscott, *The Digital Economy: Promise and Peril in the Age of Networked Intelligence* (New York, NY: McGraw-Hill, 1996).

The evidence of the last two years also suggests that e-business will evolve in such an incremental fashion. Most of the radical business models lost their appeal when they failed to generate revenues. The startups that survived into the new millennium are a small proportion of the initial population and few of these look likely to establish major new markets or challenge traditional incumbents. Furthermore, few are profitable. Indeed, when one looks for evidence of online B2C businesses that are profitable, most of these appear to be bricks-and-clicks, where the online business is an adjunct or extension of traditional strategies and capabilities. This may also be true in the B2B space (e.g., firms such as NECX or developments such as Covisent). So we are left with a handful of startups as pioneers of the "revolution" (firms such as Amazon, eBay, eTrade, and Yahoo in the B2C space, or FreeMarkets and eSteel in the B2B space). Undoubtedly, these firms have made an impact, but this impact is far less than that envisaged by the e-revolutionaries two years ago.

Summary: Evolutionary versus Revolutionary—Should We Worry?

In challenging the popular myth that e-business is revolutionary, managers can get a clearer understanding of the strategic options available. Like all myths, this one captures *some* elements of the truth—as was clearly the case with the computer revolution. The popular claim that the development of the transistor explains sufficiently the progress of computing, ignores the significant influence supporting technologies (e.g., disk storage) had on the development of the working computer. In a similar vein, claims that e-business is driving revolutionary business change are misleading and only partly correct. Social requirements govern technology (not the other way around) and current efforts to "virtualize" business have not been pervasive or process oriented enough to warrant the term revolution.

For managers, however, the real value in this conclusion relates more to market entry and the likely rate of imitation. Sensible strategies that effectively integrate brick-and-mortar facilities with an Internet presence take time to materialize. During an evolutionary period, timing of entry can be delayed until strategies are fully developed, the technical architecture is robust, and mechanisms to monitor e-business are understood. Providing classic customer service is the key and repeat purchasing will be based on service capabilities across all levels, from product selection to customer responsiveness, order fulfillment, and on-time delivery.

If there is an unpredictable revolutionary character to the phenomena we are experiencing, it lies in the nature of the way in which people, rather than businesses, interact. For many organizations—governments, NGOs, schools, and universities—their *raison d'être* is not about productivity and profit. There has been considerable social experimentation occurring with regard to the way in which many groups communicate. The ability of associations such as Amnesty International and Human Rights in China to bring influence to bear on governments and coordinate effectively has undergone a sea change. Publishing groups

such as Pearson, FT Knowledge, Thomson, Universitas 21, and the University of Phoenix are attempting to change the nature of business education and there is little doubt that the Internet has expanded learning horizons for children. From this perspective, the Internet is a "foci for genuine personal interchange and the development of complex networks of social relations."⁷³

However, as opposing trends indicate, this is not a libertarian's nirvana. Those same intelligent agents that can find the consumer a cheap rental car have the potential to comb the web for information about individuals and pass it on seamlessly to others without anyone's approval. With the proliferation of pornography, racial and social hatred, and intolerance of multiple sorts, the inability of the legal system to anticipate the problems and solve the jurisdictional issues is daunting.⁷⁴ The recent case in French courts attempting to force Yahoo! to cease providing access to services auctioning Nazi memorabilia is simply one of the more notable cases.

As Peter Drucker notes, "with these major new technologies came major new social institutions: the modern postal service, the daily paper, investment banking, and commercial banking, to name just a few. Not one of them had much to do with the steam engine or with the technology of the Industrial Revolution in general. It was these new industries and institutions that by 1850 had come to dominate the industrial and economic landscape of the developed countries."⁷⁵ Just as someone in 1801 would have had difficulty predicting the new industries and institutions of 1850, in 2001 it is difficult to predict what the new industries and institutions of 2050 will be—and in particular the extent to which they will embody widespread use of the Internet, either for social or commercial purposes.

Issues and Questions for Future Consideration

Truly revolutionary change often presents challenges in direct proportion to the benefits it offers. So it must have been in the rise of the factory and the subsequent atomization of the artisan's workshop. So it surely was with the development of the railroad and the impact increased mobility had on economic, societal, and political dimensions. However, similar claims of an e-business revolution that will fundamentally change the way business is conducted are still largely premature.

Predictions regarding the demise of brands, economies of scale, middlemen, and the like have failed to materialize. Advances in information technologies have yet to change in any significant manner the way major decisions are made in business. Instead those principles that have served us well for a century—identify customer value propositions and put together the right people, processes, and technical resources in an effectively managed manner—are still as relevant today as ever.

If the e-business revolution is to occur, then answers to new challenges will be required to ensure the costly nature of e-business development is wisely managed. What is best practice in an e-business environment, and how do firms decide whether the complex chain of upstream and downstream virtual relationships is over- or under-designed? How many specialized investments have to be made and which governance structures will work best in a virtual alliance?

Establishing trust may be the easy part; but it is the ongoing management of the relationship that is likely to be the hardest part. Building relationships will be even more important in an e-business world, where multiple channels and interaction points create a level of complexity not experienced previously.⁷⁶ Like its predecessors (e.g., EDI and ERP) e-business is likely to play an important role in certain markets and for certain types of firm. However, e-business is not a "silver bullet" and will not meet all trading requirements or provide a competitive edge for all firms. To ascertain just how the Internet fits into their strategies, firms need to put in place sensemaking approaches that look beyond the simplistic views and strategies of the Bubble years. They need to be able to answer fundamental questions such as:

- Does the Internet enable us to significantly enhance our value proposition to customers?
 - Does the Internet suit the nature of our product and appeal?
 - Can our brand attract customers to our web site?
 - What value-added services and techniques can we use to encourage "lock in"?
- Does the Internet significantly increase the efficiency of our value chain?
 - What are the savings in transaction costs?
 - How do we work with infomediaries and other new channels?
 - How can we minimize conflicts with traditional value chain partners?
- How do we organize to build a successful online business?
 - What is the required relationship between our offline and online activities?
 - Where do we obtain the necessary online marketing and web site capabilities?
 - How do we establish the appropriate internal incentives for the online business to flourish without damaging the existing business?

The crash of 2000 has provided welcome breathing space for established firms to work out their answers to these and many other questions of Internet strategy. The strategies they will choose are more likely to be incremental applications of Web technology in those settings where it is highly appropriate and where they can implement it well. In forming these strategies they must focus more on traditional rules and theories of business and pay less attention to radical IT gurus and consultants. For if the views of these revolutionaries were valid,

why is it that now is such a great time to pick up Web technology at bargain basement prices.

Notes

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9. Internet guru John Hagel III, quoted in *Knowledge@Wharton*, March 15, 2001.
10. Devinney et al., op. cit. Note that these numbers represent large bricks-and-mortar players.
11. C. Christensen describes the transistor in terms of its disruptive capability when compared to existing vacuum tube technology. C. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Boston, MA: Harvard Business School Press, 1997). The theory of disruptive technology he developed initially to describe innovation in hard disks has since been applied across a range of industries to explain why successful firms lose competitive position. The continual desire by competent managers to produce products and services of ever improving variety and quality eventually creates a situation where functionality outstrips our capacity to use them. This exposes the company to the threat from unexpected disruptive technologies. We account for this dilemma in our treatment by suggesting that revolutionary technology must meet the criteria of pervasiveness and process orientation. Thus revolutionary technology, with its potential to disrupt many industries, is a broader but compatible perspective to Christensen's. That is, some disruptive technologies (for example, the transistor) can also be revolutionary; while others may only disrupt specific industries (for example, polyester tire cord).
12. A. Reinhardt, "The Online Grocery that Works: How Tesco Succeeds Where the Dot-Coms Failed," *Business Week* (European Edition), October 1, 2001, p. EB14-20.
13. C. Argyris and D.A. Schon, *Organizational Learning* (Boston, MA: Addison-Wesley, 1978).
14. M. Symonds, "Business and the Internet: The Net Imperative," *The Economist—Survey Business and the Internet*, 1999.
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more generally, an international market research firm states that worldwide e-commerce penetration stands at 10 per cent [Taylor Nelson Sofres, July 2000]. However, these numbers relate to having made a purchase in any category in the last month, rather than to the share online spending represents of the value in each category.

16. "Orbitz Causing Dogfight in the Friendly Skies," <www.upside.com>, March 26, 2001. Significant proportions of these sales are business-to-business transactions rather than consumer purchases.
17. Schwartz, op. cit. This statistic likely still holds. Since 1999 there has been dramatic consolidation in the online grocery industry and the remaining players have restricted their operations to fewer cities than originally envisaged.
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25. "Building eBusiness Leadership," <www.forrester.com>, April 2001, and "ROI of Europe's B2B Commerce Sites," <www.forrester.com>, May 2001, document these problems, as do many others.
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